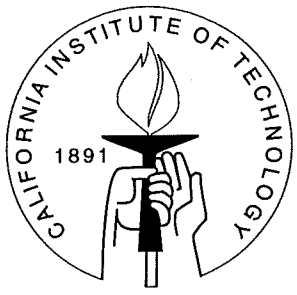
DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA 91125

INFORMATION AND AMERICAN ATTITUDES TOWARD BUREAUCRACY

R. Michael Alvarez

John Brehm
Duke University



SOCIAL SCIENCE WORKING PAPER 961

April 1996

Information and American Attitudes Toward Bureaucracy

R. Michael Alvarez John Brehm

Abstract

The exploration of American attitudes towards the Internal Revenue Service joins an unusual pair of research domains: public opinion and public administration. Public administration scholars contend that the hostility Americans show towards "bureaucracy" stems from the contradictory expectations Americans have for bureaucratic performance. Drawing upon a survey commissioned by the IRS and conducted in 1987 just after the passage of the Tax Reform Act, we explore attitudes towards the performance of the IRS in eight categories. Using a new heteroskedastic ordinal logit technique, we demonstrate (1) that it is overwhelmingly a single expectation of flexibility that governs attitudes towards the IRS; (2) that these expectations are not in contradiction; and (3) that domain-specific information sharply focuses respondent attitudes towards bureaucracy.

Information and American Attitudes Toward Bureaucracy *

R. Michael Alvarez John Brehm

An exploration of American attitudes towards the Internal Revenue Service affords opportunities to contribute towards an unusual combination of research domains — public opinion and public administration. In this paper, we employ a survey commissioned by the IRS and conducted in 1987 to inquire into what it is about bureaucracies in general and the IRS in specific that makes them both such unpopular entities in contemporary American public opinion.

We think there is no obvious reason why bureaucracies should be unpopular. "Bureaucrats" are unpopular, even if "public servants" are commendable. President Clinton's 1996 State of the Union Address lauded the performance of a Social Security administrator and a police officer for their courage in the aftermath of the Oklahoma City bombing, and of the same administrator for working without pay to deliver checks to Social Security recipients. The same speech promised that the "era of big government is over" and to continue efforts to restrain the size and scope of bureaucracy.

President Clinton's mixed expressions toward bureaucracy are hardly a typical. The word "bureaucracy" is sufficiently negative enough that virtually every recent major scholarly consideration of the performance of bureaucracy begins with an acknowledgment of the poisonous connotation of the word (e.g., Downs 1967, Niskanen 1971, Goodsell 1985, Wilson 1989). Of course, with "anger at Washington bureaucrats" a popular account for electoral change in both the 1992 and 1994 elections, and with levels of trust in government at record lows (Stanley and Niemi 1995: 157), it seems clear that the American public is increasingly dissatisfied with non-elected federal officials. This is at the same time that U.S. bureaucrats deliver services with an efficiency unmatched by equivalent public servants in virtually every other government (Goodsell 1985, 59–60), and when the actual number of civilian federal employees in not at a twelve year low (Stanley and Niemi 1995: 250).

Why is it that "bureaucracy" is so odious a word, at the same time that it provides such high delivery of service with fewer personnel? Scholars of public administration speculate that the reasons for public dislike stem from contradictory expectations (e.g.,

*Prepared for presentation at the 54th Annual Meeting of the Midwest Political Science Association, April 18–20, 1996, Chicago, IL. Thanks to Jim Battista for research assistance.

Goodsell 1985, Perrow 1972, Wilson 1989). Citizens expect bureaucracies to be equitable and fair, to provide all citizens with the same treatment under the law; citizens also want bureaucracies to be flexible, to acknowledge the variations in conditions that might make for differential application of the law. Flexibility conflicts with not just equity, but also with efficiency. Bureaucracies could maximize their efficiency by treating all inputs similarly, but only at the expense of the recognition of individual variation. Bureaucrats — especially those that handle our own money— should be honest, but we don't object when bureaucrats cut us some slack on our own (presumably minor) violations. Presumptively, these contradictions with regards to equity, flexibility and honesty abound in attitudes towards bureaucracy.

Recent public opinion scholarship provides guidance on contradictory expectations. For one, it is far from evident that these are real contradictions. People may believe in equity, honesty, and efficiency, but only as they apply to other individuals. When it comes to our own treatment by bureaucracy, we want flexibility and see no contradiction. But people also have remarkable abilities to contextualize every potential policy problem, and that such abilities should come to bear in attitudes towards those who deliver policy would hardly be surprising. For another, if these are real contradictions, then there is no particular reason to expect systematic bias in the mean response (i.e., depressing attitudes toward bureaucracy). We have recently proposed that contradictory expectations about public policy and public figures should affect the heterogeneity of individual response, not only the mean (Alvarez and Brehm 1995, 1997).

The instructiveness of research goes both ways. The particular domain of attitudes toward bureaucracy should yield insights to public opinion not obtainable by the study of attitudes towards other questions. Unlike attitudes towards much of public policy, real experience means that attitudes could be governed more by interest than by symbol. We all have experience dealing with bureaucracies, on a nearly daily basis; our attitudes toward public policy problems such as racial integration or abortion could be present without experience, only a result of the potent symbolic content of these policy problems. Further, the particular area of the present paper is one where citizens have concrete incentives to acquire domain-specific information. The better informed a respondent is about changes in tax policy, the more that respondent should be able to minimize his or her own tax burden, and to minimize the risks of sanction for failure to appropriately complete tax returns. Hawthorne and Jackson (1987) demonstrate that material self-interest affects opinions on tax policy, one of very few areas where scholars have been successful in demonstrating direct effects of material self-interest on opinions. The present research area is one where the payoffs of highly domain specific information should matter, and where chronic informedness may be of little direct consequence.

No U.S. bureaucracy is more emblematic of the disjunction between actual performance and public opprobrium than the Internal Revenue Service. U.S. voluntary tax compliance rates exceed those of every other Western democracy (Long and Swingen 1991). IRS employees process more tax returns than any tax officials in the world. But the IRS and its employees fare very poorly in comparison not just to other federal bureau-

cracies, but also to other financial institutions (Harris 1988). We will further demonstrate that it is only one of these potentially contradictory values that matters: evaluations of the attributes of IRS employees depend upon evaluations of flexibility, and very little on assessments of equity or honesty. We will also show that information matters, too: the more that respondents know about the tax system, the more their opinions about the IRS are well-defined.

Our paper follows in three main sections. We first describe our data for the present paper, and the construction of our principal measures. We then discuss in more detail the econometric model (heteroskedastic ordered logit) we use to estimate both the location and heterogeneity of choice across multiple ordered categories. We then present our results for models of attitudes towards the IRS. The final section elaborates on our conclusions, with respect to both public opinion and public administration, and to implications for current debates over the "flat tax."

1 Data and Measures

That attitudes towards the IRS might be a function of contradictory expectations is similar to recent research we have conducted in the domains of public opinion towards abortion and affirmative action policy (Alvarez and Brehm 1995, 1997). Those two domains of public opinion are like attitudes toward bureaucracy, since attitudes about specific matters of policy are argued to be functions of underlying values or expectations, and the conflict between these values or expectations.

So to understand the way expectations influence attitudes about the IRS, we borrow from our work on abortion and public opinion. The generic model we will use here is quite similar to that we used in our earlier research. The essence of the model is that attitudes are formed by values or expectations. But individuals have differing levels of variability in their attitudes (due to ambivalence or uncertainty), and this ambivalence or uncertainty can be modeled as the variance of each attitude.

This requires that we have data for attitudes about the IRS, people's expectations about IRS activities, and their informedness about the IRS. The Internal Revenue Service commissioned the Harris Associates survey organization to conduct a nationwide survey of taxpayers in July and August of 1987, in the first year that the Tax Reform Act went into effect, referred to as the "1987 Taxpayer Opinion Survey" (TOS). The purposes of the study were varied, including general questions on tax reform, views about tax evasion, and experiences with and attitudes toward the IRS. Our interest in the present paper is to explore the latter topic, and the survey instrument contains several truly unique features.[1]

[1]The survey data are available through the Interuniversity Consortium for Political and Social Research (ICPSR # 8927) as a Class IV release. This means that much of the details of the study information must be obtained through government documents, or through the Harris organization. As best as we can tell at this time, the survey was administered as a face-to-face interview to 2003 re-

One creative category of measures compared the performance of the IRS as a whole to two relevant categories of comparison groups: other federal agencies, and other financial institutions. After all, it is possible that the poor impressions of the IRS are due to a simple dislike of government agencies in general. In this way, respondents dislike the IRS simply because it is another bureaucracy. It is also possible that the poor status of the IRS is due to respondents' resentment against financial institutions' brusque handling of ones'own monetary transactions.

First, we use eight measures of attitudes towards the IRS from the 1987 TOS as dependent variables in our analysis. The survey asked respondents to state whether they agreed or disagreed (on a 6 point scale, where 6 represented "strongly agree" and 1 represented "strongly disagree") with the following statements:

- Honesty: "The IRS employees are *honest* — you could never bribe them.
- Knowledgeable: "IRS employees are just as knowledgeable as any private tax expert."
- Equitable: "I am confident that the IRS would never try to take more money from me than they should."
- Accurate: "You can depend on the IRS to keep accurate tax records."
- Snooping: "That the IRS automatically withholds some of my income and even gets copies of my W2 forms and interest statements sometimes makes me feel they are always nearby and watching.
- Own: "When it comes to investigating their own people, the IRS is as thorough as they are with everyone else."
- Integrity: "IRS employees have an unusual amount of honesty and integrity."
- Reasonable: "IRS procedures and practices are fair and reasonable ones that respect the rights of taxpayers."

Those eight statements give us the eight dependent variables we use below (we refer to each by the name given to the variable on the left).

Figure 1 displays histograms of each of the eight scales.Somewhat surprisingly, the IRS employees fare reasonably well on most of these scales. Respondents were more inclined to agree than disagree that IRS employees are honest, knowledgeable, and provide

spondents, with a slightly unusual sample selection procedure. The study began with selection of 200 primary sampling units, and then drew a sample frame representative of the entire adult population of the United States. Because not every adult resident of the U.S. is required to submit an IRS return, the survey administrators further selected the respondents who represent the "taxpayers sample." Interviewers determined this on the basis of all household members who filed a Federal return, or where the spouse filed a joint return with the respondent. The method cannot identify respondents who should have filed under IRS regulations, but did not.

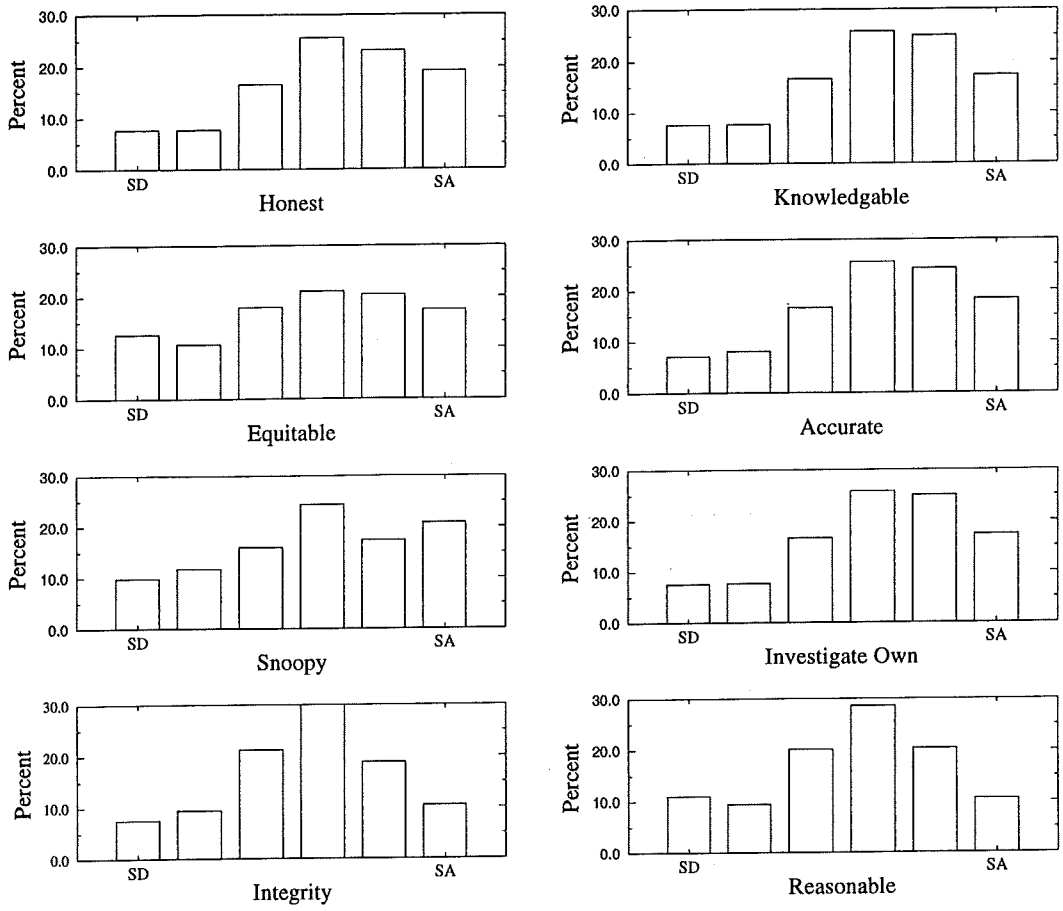


Figure 1: Attributes of IRS Employees, 1987 Taxpayer Opinion Survey

accurate information, and the differences are pronounced. The advantages of IRS employees are slightly less pronounced when it comes to being seen as reasonable, and likely to investigate violations of their own. The one dimension which the IRS comes out poorly concerns the sole negative question, where respondents are slightly more likely to agree than disagree that they feel the IRS is always watching. Our enterprise in this paper will be to account for variation on each of these eight scales by how strongly the respondent feels the IRS meets each of three potentially competing expectations, honesty, flexibility, and fairness.

Next, we use a measurement model approach to develop scales for expectations of honesty, flexibility, and fairness. Table 1 details the measurement model. First, our measure for fairness comes from seven questions in the 1987 TOS which all measure the fairness of the federal income tax system, or the Tax Reform Act of 1986. The second measure is for honesty of the IRS staff, and it is constructed from responses to two questions, both focused on the honesty of the IRS staff as compared to other public and private employees. Last, we measure the flexibility of the IRS with four questions.

Table 1: Measurement Model for Scales for Attitudes Toward IRS and Taxes

Fairness of tax system	
Do you feel [federal income tax system] is fair?	1.00
As a result of Tax Reform Act of 1986, tax laws more fair?	.53
TRA ensures same income pays same tax?	.57
TRA ensures each group pays fair share?	.87
TRA ensures that wealthy pay progressive share of tax?	.74
When influential people cheat, more or less likely to be caught?	.16
Personally know someone who had problems with IRS?	.13
Honesty	
Honesty of IRS staff compared to other federal government agencies	1.00
Honesty of IRS staff compared to other financial institutions	.61
Flexibility	
IRS employees very willing to help	1.00
IRS employees willing to act in taxpayer's best interest	.82
Helpfulness of IRS staff compared to other federal government agencies	.63
Helpfulness of IRS staff compared to other financial institutions	.56

These four questions focus on the willingness of IRS staff to assist taxpayers and on the helpfulness of the IRS staff relative to other public and private employees.

Third, we need a measure of how informed each respondent is about tax policy. One of the most intriguing features of the 1987 TOS is the extent to which the interviewer attempted to assess the respondent's informedness about the changes in the 1986 Tax Reform Act (TRA). The TRA represented the culmination of years of activity from members of both parties (both Ronald Reagan and Bill Bradley were among the early partisans). Changes made during the markup sessions were complicated and many. In a battery of questions appearing very early within the instrument, respondents were asked to identify whether each of 22 aspects of the tax law had changed under the TRA, and if so, in what way. Table 2 displays the list of potentially changing aspects of the code, and the "correct" answers associated with each.[2]

We used these records of correct and incorrect answers to create two information scales, which we call "soft" and a "hard" information measures. The soft information scale simply records whether the respondent was aware that the particular aspect had changed, in some way. The hard information scale only records whether a respondent was correct if the respondent correctly identified the nature of the change (i.e., an increase, a reduction or restriction, an elimination).

[2]We determined the "correct" answer in each case by consultation with one of two IRS documents, the *Summary for Individuals* or the *Highlights of the 1987 Tax Reform Act.*.

Table 2: Construction of domain specific information scale

Aspect	Changed?	How?
The dollar amount of the exemption for yourself, spouse, or dependents	Yes	Increased[1]
The personal exemption on a child's return	Yes	Eliminated[1]
The standard deduction on a child's return	Yes	Increased[1]
The deduction for being over age 65 or blind	Yes	Restricted[2]
The credit for child care expenses	No	(na)[2]
The exclusion of dividends of $100/$200	Yes	Eliminated[1]
The tax on capital gains	Yes	Increased[1]
The tax on fellowships or scholarships' room and board	Yes	Reduced[2]
The taxable aspect of unemployment compensation	Yes	Increased[1]
Unreimbursed employee business expenses	Yes	Reduced[2]
Unreimbursed meals and entertainment expenses	Yes	Reduced[2]
I.R.A. deductions	Yes	Reduced[2]
The deduction for married couples when both work	Yes	Eliminated[1]
The deduction for contributions to charity for those who do not itemize their deductions	Yes	Reduced[2]
The deduction for medical and dental expenses	Yes	Reduced[2]
The deduction for state and local income taxes	No	(na)[2]
The deduction for interest on consumer debt and credit cards	Yes	Reduced[2]
Deductions for other miscellaneous itemized items	Yes	Reduced[2]
The penalty for "failure to pay"	Yes	Increased[1]
The investment tax credit	Yes	Eliminated[1]
The need to report tax-exempt income	Yes	Increased[1]

Correct responses to question "As you may know, Congress revised many aspects of the Federal income tax law last year. Most of the changes they made are effective for the 1987 tax year. Here is a list of different aspects that are built into our income tax system. Some have been changed and some have remained the same. For each, tell me whether — from what you've read or heard — it has changed or remained the same. If you don't know about some of these, just say so. (Has it been increased, been reduced or restricted, or been eliminated?)" Sources: [1] *Summary for Individuals,* [2] *Highlights of the 1987 Tax Reform Act.*

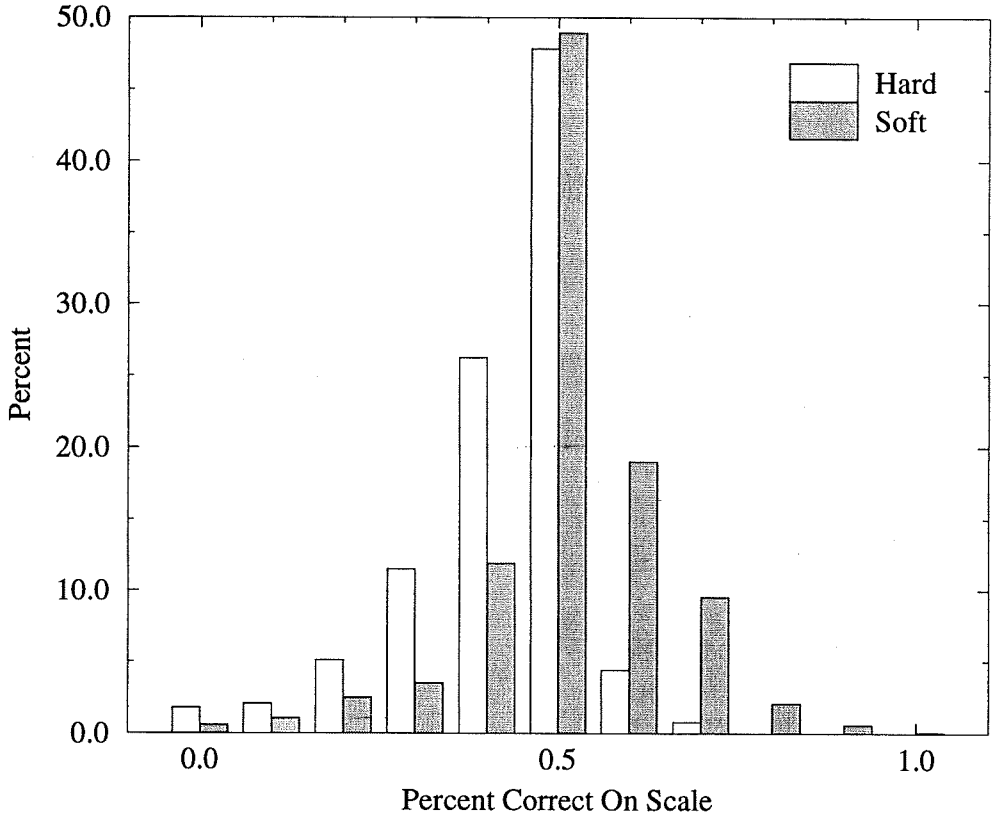


Figure 2: Distribution of "Hard" and "Soft" Information Scales, 1987 Taxpayer Opinion Survey

As the reader will note from Table 2, 20 out of the 22 items changed in one direction or another. A naive respondent who simply assumed that everything changed would have received a 92%. In Figure 2, we present the histogram of the distribution of both soft and hard information scales. One truly striking feature is that the vast majority of respondents score extremely low on both of these scales, even when a guess that everything changed would have yielded an extremely high score. In fact, only 2% of the respondents exceeded this score. As one would expect, the distribution of respondents on the hard information scale is substantially lower than the soft information scale. We also wish to note that both scales generate respondents who scored at both extremes, those who answered none of the questions correctly, and those who answered only one of the questions correctly.

These measures of domain specific informedness are, in our view, truly unusual for attitudes toward public policy concerns. Consider Zaller's (1992) book which explores the respondent's levels of political informedness, in this case, constructed as a measure

of "general, chronic awareness (43)." Zaller writes

> In using this sort of measure, I will be assuming that persons who are knowledgeable about politics in general are habitually attentive to communications on most particular issues as well. This measurement strategy is less than ideal. More narrowly focused measures of awareness — devoted exclusively, say, to intellectual engagement with foreign policy issues or race policy issues, and used exclusively in connection with reception of information concerning foreign or race policy issues — would be preferable to general awareness measures. However, such domain-specific awareness measures are rarely carried on opinion surveys and none are available for the cases I examine in this study (43).

Likewise, Luskin (1987) constructs a measure of general political informedness by tallying respondents' correct relative placement of the parties on a battery of 11 issues. Although the measure is composed of domain specific information, Luskin explicitly aims for a more comprehensive notion of "information holding," presumably because (as argued earlier in the essay) "Ideology as high sophistication is comprehensive (863)."

Despite the regular dependence of many scholars upon "chronic" informedness as the means to assess how respondents incorporate messages about politics, we argue that the form of information implicit in the authors' models of information flow should be highly domain specific. If the models maintain that respondents' ability to counter-argue against counter-partisan information (to "resist" in Zaller's RAS model) hinges upon the store of information that the respondent possesses, it makes considerably greater sense that the respondents' arguments are grounded in the specific domain of the communication, and not simply their "chronic" connection to elite discourse. One of the points which will emerge from our analysis below is that domain specific information matters, in such a way that greater information reduces the variability of individual response.

2 Modeling Heterogeneity in Ordinal Responses

As in our earlier work, we use heteroskedastic discrete choice models to estimate the heterogeneity in beliefs about the IRS (Alvarez and Brehm 1995, 1997). Generally, the basic idea behind the techniques we use is to specify and estimate simultaneously two related equations, one for the probability of a choice, the other for the variance of the error residual. We refer to the first equation as the "Choice Model," and to the second equation as the "Variance Model." Note that the variance modeled by this approach is the individual respondent's variance in choice, not the variance across the sample. Our approach employs inferential statistics in order to model and estimate this variance in choice.

In our previous work we examined the heterogeneity in beliefs about two important areas of public opinion — attitudes about abortion and affirmative action. In our paper on abortion, we found substantial support for the hypothesis that many Americans are ambivalent, and not uncertain, about abortion policy choices, and that this ambivalence

is determined by the conflict between two core values, the value of human life and respect for women's rights (Alvarez and Brehm 1995). In our paper on affirmative action we were surprised to find the opposite: variability in attitudes towards racial policies are much more a function of uncertainty, not ambivalence. In both these papers, though, we showed that the heteroskedastic probit model can be applied to many analyses of discrete policy choice.

Here we are interested in examining the same hypotheses, but now in the context of attitudes towards the government bureaucracy. As we discussed earlier, there is some discussion in both the academic literature and the popular press about the role that ambivalence plays in attitudes about government bureaucracy, even for individual choice. What is missing is a direct examination of the form of the response variability (i.e., uncertainty or ambivalence). Ambivalence as the form of response variability entails two criteria, that individuals who are better informed exhibit greater response variability, because those individuals display conflict between core beliefs or values. Using the 1987 Taxpayer Opinion Survey and our heteroskedastic choice techniques, we can examine policy choice variability, and evaluate whether it is ambivalence or uncertainty that characterizes variable opinions about government bureaucracies.

Thus, following our earlier work model an individual's belief about the IRS as a function first of their expectations about the IRS — fairness, flexibility and honesty. These variables make up our systematic component of the model of the mean. We then model the variability of those beliefs about the IRS across individuals as functions of information and expectations, and these make up our variance model. For information, we use the domain specific information variables; for expectations we use fairness and flexibility, and the conflict between these two expectations. We use the conflict variable in the variance model to determine whether individuals with dissimilar expectations (high on fairness, but low on flexibility, or the opposite) have greater ambivalence about the IRS. Given that the "soft" and "hard" information scales measure the same phenomenon, we estimate our models separately for each domain-specific information measure.

To estimate the parameters of the two components of the model we turn to heteroskedastic ordered logit. In our earlier work we used models with dichotomous dependent variables. A thorough review of the mechanics of these models, in particular the heteroskedastic probit model, may be found in our first paper (Alvarez and Brehm 1995), as well as in one prominent econometrics text (Greene 1993). In our earlier work we focused on models which have the usual categorical choice likelihood function:

$$\log L(\pi|y) = \sum_{i=1}^{N} y_i \log \pi_i + (1 - y_i) \log(1 - \pi) \tag{1}$$

Where π is reparameterized as a function, $f()$,(usually a probit or logit function) of a set of explanatory variables (X):

$$\pi_i = F(X_i\beta) \tag{2}$$

We call this function (2) the "choice model." The usual probit or logit assumes that the variance of the choice function is constant, and can be standardized to 1.

The innovation in our work is to notice that choice is sometimes heterogeneous, that the underlying variance of this choice function is not constant. Borrowing from Harvey's 'multiplicative heteroskedasticity' approach (1976), we reparameterize the variance of an individual's choice $\text{var}(\epsilon_i)$ as a function of an additional set of explanatory variables (Z):

$$\text{var}(\epsilon_i) = \exp(Z_i\gamma)^2 \tag{3}$$

(Exponentiation is required in order to keep variance greater than zero). We refer to this second function (3) as the "variance model." This leads to a variation on the usual probit log-likelihood for the binary choice model:

$$\log L = \sum_i \left(y_i \log \Phi \left(\frac{X_i\beta}{\exp^{Z_i\gamma}} \right) + (1 - y_i) \log \left[1 - \Phi \left(\frac{X_i\beta}{\exp^{Z_i\gamma}} \right) \right] \right) \tag{4}$$

We used this log-likelihood function in our previous two analyses of heterogeneity in public opinion (Alvarez and Brehm 1995, 1997).

In this paper, we extend this heterogeneous discrete choice model to ordered categorical dependent variables. Our dependent measures of attitudes towards the IRS have six ordered categories, ranging from strongly agree to strongly disagree. In this situation, the easiest approach, using linear regression, is clearly incorrect since the linear regression model is based on the assumption that the difference between adjacent points is constant, e.g., that the difference between "strongly agree" (6) and "agree somewhat" (5) is the same as the difference between "strongly disagree" (1) and "disagree somewhat" (2). Additionally, other discrete choice techniques like multinomial logit would not take into account the ordinal nature of our dependent variables.

We begin the derivation of our ordered heteroskedastic choice model by noting that:

$$\begin{aligned} P(y = 1) &= F\left(\frac{-X\beta}{\sigma^2}\right) \\ P(y = 2) &= F\left(\frac{\mu_1 - X\beta}{\sigma^2}\right) - F\left(\frac{-X\beta}{\sigma^2}\right) \\ &\vdots \qquad (5) \\ P(y = 6) &= 1 - F\left(\frac{\mu_5 - X\beta}{\sigma^2}\right) \qquad (6) \end{aligned}$$

Here y is our categorical dependent variable, X represents the variables in the choice function, β are the choice function parameters, μ_j are the estimated "thresholds" between choice categories, and σ^2 is the error variance. Usual practice is to assume σ^2 to be unity (see Aitchison and Silvey (1957), McKelvey and Zavoina (1975)); however we wish to relax this assumption and assume heteroskedasticity.

As in our work on binary choice models, we parameterize the variance for an individual's choice ($\text{var}(\epsilon_i)$) as a function of a set of explanatory variables (Z):

$$\text{var}(\epsilon_i) = \sigma^2 = \exp(Z_i\gamma)^2 \tag{7}$$

This allows us to write the choice probabilities using this notation:

$$\begin{aligned} P(y=1) &= F\left(\frac{-X\beta}{\exp(Z_i\gamma)^2}\right) \\ P(y=2) &= F\left(\frac{\mu_1 - X\beta}{\exp(Z_i\gamma)^2}\right) - F\left(\frac{-X\beta}{\exp(Z_i\gamma)^2}\right) \\ &\vdots \qquad (8) \\ P(y=6) &= 1 - F\left(\frac{\mu_5 - X\beta}{\exp(Z_i\gamma)^2}\right) \qquad (9) \end{aligned}$$

We next assume that the errors have a logistic distribution, instead of a normal distribution (i.e., $F(z) = 1/(1+\exp(-z))$).[3] We give the full likelihood function for our analysis in the appendix of this paper.

There is an implicit likelihood-ratio test for the presence of heterogeneity with the addition of the variables in the denominator to the likelihood. If the variables in the variance function in the denominator add no new information, then the likelihood for ordered heteroskedastic logit will not be appreciably different from the likelihood for the standard ordered logit. The test is then

$$LR = 2 \times (L_H - L_S) \tag{10}$$

where L_H is the log-likelihood for the heteroskedastic ordered logit, and L_S is the log-likelihood for the standard ordered logit. The LR is distributed as a χ^2 with as many degrees of freedom as there are Z variables. In our empirical analysis we present the results of these tests for heteroskedasticity.

3 Results

3.1 Model Estimates

Table 3 provides the model estimates and standard errors for the systematic component of the model and the estimated threshold parameters, followed by the estimates for the variance component, for the specification of the model including the "soft" information scale. In the last four rows of Table 3 we give summary statistics, the sample size for

[3]This assumption has little practical consequence. We have estimated the models which we present below using the normal distribution (ordered heteroskedastic probit) and the results are indistinguishable. In practice, the logistic distribution is somewhat easier to use and to estimate.

each estimated model, and the results of the test for the presence of heteroskedasticity in the model.

Beginning with the estimated results for the choice model, note that generally the three expectation measures perform as expected. With occasional exceptions (three) the parameters are all of the correct sign (positive), and most are statistically significant (eighteen of the estimated parameters are statistically significant at the p=.05 level, and only 6 are insignificant). These estimated results imply that more positive expectations lead to more positive attitudes towards the IRS.

But, notice also that the estimated results suggest that two of our expectation measures — flexibility and honesty — have a stronger effect on attitudes about the IRS than do fairness expectations. Four of the eight estimated coefficients for fairness are statistically insignificant, and two of the statistically insignificant coefficients have the incorrect sign. This indicates that fairness is not as strongly related to these eight attitudes about the IRS than are flexibility and honesty.

Turning now to the estimates for the variance component of the model, it is clear that heteroskedasticity is a problem in these responses. All eight of the heteroskedasticity tests are statistically significant, which implies that we can reject the null hypothesis of no heteroskedasticity with a high degree of confidence. In addition, all of the parameters we estimate in the variance component are correctly signed (negative) and all are statistically significant. Thus, we have clear evidence of individual-level heterogeneity in these attitudes.

Examination of the variance function parameters, however, leads to the conclusion that expectations, and their conflict, produce greater error variance for individual — meaning that these individuals have greater ambivalence about the IRS. This does not mean that information does not matter, because it clearly does. But these estimated coefficient simply that expectations "matter" more for ambivalence that information.

We conduct a parallel analysis using the "hard" information measures, and report the heteroskedastic ordinal logit in Table 4. The only important changes between the "soft" and "hard" information analyses occur on the information measures themselves: none of the remaining coefficients change substantively across the two approaches. By contrast with the effect of "soft" information, the sign on the "hard" measure is inconsistent, and never statistically significant. That is, while the "soft" information measure conclusively demonstrates that respondents are *uncertain,* not ambivalent, the "hard" information measure cannot resolve the distinction.

What do we make of the partial presence of domain-specific information effects? For one, we take it as evidence that domain specific information can directly influence the extent to which respondents hold firm and fixed opinions. It is not just a matter of connection to elite discourse in general that accounts for the level of heterogeneity in opinion, as offered by Zaller (1992), but that respondents' knowledge of specific areas also affects opinion. It is possible that one can interpret the difference between the effects

Table 3 Heteroskedastic Ordered Logit Estimates of Attributes of IRS Employees Using Soft Information Scale, 1987 Taxpayer Opinion Survey

Variable	Honesty	Knowledgable	Equitable	Accurate	Snoop	Own	Integrity	Reasonable
Choice Model								
Constant	0.62	0.51	0.34	0.47	0.88	0.53	0.26	0.31
	(0.11)	(0.09)	(0.08)	(0.11)	(0.13)	(0.10)	(0.15)	(0.08)
Flexibility	0.24*	0.67*	0.41*	0.70*	−0.01	0.47*	0.99*	0.64 *
	(0.10)	(0.11)	(0.10)	(0.15)	(0.04)	(0.10)	(0.20)	(0.12)
Fairness	0.04	−0.04	0.13*	0.08	−0.05	0.10*	0.33*	0.12 *
	(0.06)	(0.04)	(0.05)	(0.07)	(0.06)	(0.04)	(0.11)	(0.04)
Honesty	0.58*	0.09	0.34*	0.55*	0.21*	0.20*	1.19*	0.13 *
	(0.13)	(0.07)	(0.09)	(0.14)	(0.09)	(0.09)	(0.24)	(0.06)
μ_2	0.55	0.64	0.50	0.59	0.57	0.51	0.78	0.45
	(0.09)	(0.09)	(0.07)	(0.09)	(0.09)	(0.09)	(0.11)	(0.07)
μ_3	0.85	0.84	0.71	0.95	0.79	0.77	1.30	0.69
	(0.11)	(0.10)	(0.09)	(0.11)	(0.10)	(0.10)	(0.14)	(0.09)
μ_4	1.14	1.02	0.88	1.29	1.04	1.00	1.93	0.90
	(0.13)	(0.12)	(0.11)	(0.14)	(0.13)	(0.12)	(0.21)	(0.11)
μ_5	1.41	1.19	1.06	1.64	1.24	1.18	2.38	1.07
	(0.16)	(0.14)	(0.13)	(0.19)	(0.15)	(0.15)	(0.27)	(0.14)
Variance Model								
Soft Info Scale	−0.63*	−0.68*	−0.51*	−0.75*	−0.51*	−0.80*	−0.54*	−1.08 *
	(0.16)	(0.15)	(0.17)	(0.17)	(0.18)	(0.17)	(0.16)	(0.17)
Flexibility	−0.91*	−1.83*	−1.92*	−1.26*	−1.41*	−1.75*	−0.69*	−1.70 *
	(0.25)	(0.27)	(0.26)	(0.25)	(0.24)	(0.29)	(0.24)	(0.28)
Fairness	−1.22*	−0.99*	−1.06*	−0.94*	−0.96*	−1.22*	−0.81*	−1.51 *
	(0.20)	(0.19)	(0.19)	(0.19)	(0.20)	(0.20)	(0.19)	(0.20)
Conflict	−1.40*	−1.25*	−0.93*	−0.72*	−1.13*	−0.92*	−1.19*	−1.17 *
	(0.29)	(0.29)	(0.27)	(0.27)	(0.29)	(0.30)	(0.27)	(0.28)
Mean Log-Likelihood	−1.50	−1.46	−1.45	−1.47	−1.53	−1.43	−1.38	−1.31
N	580	600	603	608	603	561	588	608
Het Test	173.13*	254.05*	215.23*	146.72*	190.28*	198.84*	95.03*	250.97 *

Table 4 Heteroskedastic Ordered Logit Estimates of Attributes of IRS Employees Using "Hard" Information, 1987 Taxpayer Opinion Survey

Variable	Honesty	Knowledgable	Equitable	Acc	Snoop	Own	Integrity	Reas
Choice Model								
Constant	0.65	0.57	0.34	0.52	0.91	0.55	0.25	0.36
	(0.12)	(0.10)	(0.09)	(0.12)	(0.42)	(0.10)	(0.17)	(0.09)
Flexibility	0.30*	0.70*	0.42*	0.78*	−0.02	0.56*	1.08*	0.72 *
	(0.12)	(0.12)	(0.11)	(0.16)	(0.79)	(0.12)	(0.22)	(0.14)
Fairness	0.05	−0.05	0.14*	0.09	−0.08	0.13*	0.40*	0.16 *
	(0.07)	(0.04)	(0.05)	(0.07)	(0.09)	(0.05)	(0.12)	(0.05)
Honesty	0.62*	0.08	0.40*	0.56*	0.28*	0.23*	1.28*	0.13 *
	(0.15)	(0.07)	(0.10)	(0.15)	(0.48)	(0.10)	(0.26)	(0.07)
μ_2	0.57	0.67	0.52	0.62	0.60	0.53	0.83	0.48
	(0.09)	(0.09)	(0.08)	(0.09)	(0.11)	(0.09)	(0.11)	(0.07)
μ_3	0.90	0.90	0.75	1.03	0.83	0.84	1.40	0.77
	(0.11)	(0.10)	(0.09)	(0.12)	(0.15)	(0.11)	(0.15)	(0.09)
μ_4	1.24	1.10	0.93	1.40	1.09	1.10	2.08	1.01
	(0.14)	(0.12)	(0.11)	(0.15)	(0.21)	(0.13)	(0.21)	(0.12)
μ_5	1.54	1.27	1.14	1.77	1.29	1.32	2.56	1.20
	(0.17)	(0.14)	(0.14)	(0.19)	(0.26)	(0.16)	(0.28)	(0.15)
Variance Model								
Hard Info Scale	−0.13	−0.08	0.04	0.22	0.50	0.04	−0.03	−0.03
	(0.19)	(0.19)	(0.18)	(0.19)	(0.26)	(0.16)	(0.14)	(0.14)
Flexibility	−0.97*	−1.93*	−1.91*	−1.40*	−1.50*	−1.77*	−0.74*	−1.83 *
	(0.25)	(0.26)	(0.26)	(0.24)	(0.60)	(0.28)	(0.24)	(0.27)
Fairness	−1.14*	−0.91*	−1.00*	−0.85*	−0.85*	−1.11*	−0.74*	−1.37 *
	(0.20)	(0.19)	(0.18)	(0.18)	(0.24)	(0.20)	(0.19)	(0.20)
Conflict	−1.39*	−1.34*	−1.02*	−0.68*	−1.21*	−0.96*	−1.21*	−1.23 *
	(0.29)	(0.29)	(0.27)	(0.27)	(0.31)	(0.29)	(0.27)	(0.28)
Mean Log-Likelihood	−1.51*	−1.48*	−1.46*	−1.48*	−1.53*	−1.45*	−1.39*	−1.34 *
N	580	600	603	608	603	561	588	608
Het Test	157.62*	234.22*	205.77*	128.35*	188.92*	176.65*	83.01*	210.42 *

of soft and hard information as evidence of the broad importance of elite discourse in shaping opinion. One could plausibly argue that the soft information scale merely tracks whether a respondent paid some heed to what elites were considering changing in the tax code, while the hard information scale actually tracks interest in tax policy per se. The soft information scale, by this interpretation, then denotes more a familiarity with elite discussion rather than the specific informedness about tax policy. One could also plausibly interpret the hard information scale as measuring domain specific information in the wrong domain. The dependent variables here speak to the respondents attitudes towards those who administer tax policy, and not tax policy itself. One might expect that this hard information scale could have sharper effects on attitudes towards taxation, and that correspondingly strong effects could be observed in an equivalent hard information scale directly pertinent towards attitudes towards the IRS itself.

3.2 Marginal Probability Estimates

However, we temper our conclusions from the previous section since the ordered logit models are exceptionally difficult to interpret. First, as is usually the case in discrete choice models, the coefficient estimates obtained are not directly related to the marginal effects of each independent variable on the choice probabilities. This means that additional steps are necessary to make these results interpretable. Second, the ordered nature of our dependent variables makes for a further complication. Say we are interested in the marginal effect of an increase in one of the independent variables on the predicted probabilities of choosing each category. An increase in the independent variable in question implies a decrease in the probability of the lowest category being chosen, and an increase in the probability of the highest category being chosen. But for the middle categories, the results can often be ambiguous, since an increase in the value of an independent variable can lead to a decrease or an increase in the probabilities of middle categories being chosen.

So that we can better interpret these results, we produce probability estimates from our results in Table 3 the previous section. Given the success of the "soft" information scale, we focus here only on the results from that specification of the variance function. We first estimate the probability that an "average" hypothetical respondent (a person with mean responses on all variables in the model) would answer a particular question about the IRS with by saying they "strongly disagree" with the particular statements. We then re-estimate this same probability twice: we estimate the probability by setting one of the variables to its minimum, and then we estimate the same probability again after setting the same variable to its maximum. This produces two probability estimates, and we then take the difference between the two as our measure of the effect of the particular independent variable. We repeat this procedure for the probability that the respondent would give the high-category response ("strongly agree").

We give in Table 5 the estimated probability differences for the systemic component estimates. Here the probability differences for the probability of a "strongly disagree"

response are given in the three left columns, for a "strongly agree" response in the three right columns. To determine the impact of one of the systemic component estimates for one of the eight IRS attitudes, simply read the values across the appropriate row for the particular dependent variable.

The correct signs for these probability estimates are that those for the probability of a "strongly disagree" response should be negative (increasingly positive expectations should lead to a lower probability of a "strongly disagree" response), while those for the probability of a "strongly agree" response should be positive (increasingly positive expectations should lead to a higher probability of a "strongly agree" response).

In general, these are the patterns observed in Table 5. For six of the eight dependent variables (honesty, equitable, accurate, own, integrity, and reasonable), we see marginal effects which are correctly signed. In addition, we see that the effects of flexibility and honesty are much greater than the effects of fairness on the attitudes of Americans towards government bureaucracies. This means that flexibility and honesty, as expectations about government activity, play a much stronger role in determining individual beliefs about the activities of the IRS than notions of fairness.

Interpreting the estimated effects of each variable in the variance function is also difficult. To facilitate interpretation, we resort to a procedure much like that just used for the choice function. In Table 6 we give the estimate effects on the magnitude of the error variance for a one standard deviation increase from the sample mean for each variable in the variance function. In other words, we calculate the estimated error variance for a "hypothetical respondent" (the same as above). We then increase the value of the variance function variable by one standard deviation, and re-calculate the error variance. We report the differences between these two calculations in Table 6.

Again, recall that increasing each variable in the variance function should reduce the magnitude of the error variance. Again we see that this expectation is confirmed in these results — each of the estimate effects in Table 6 is negative. In general, the estimate effects of information and flexibility have the largest impact on error variance, or on variation in individual beliefs about government bureaucracy. In four models, honesty, accurate, integrity and reasonable, information has the largest effect on error variance, while in the other four models (knowledgeable, equitable, snoop and own) we see that flexibility has the largest effect.

The other two variables in the variance function perform somewhat erratically. Fairness has a relatively strong impact in the honesty, accurate, snoop and integrity models, but in each, the effect is usually below that of information and flexibility. The interaction between flexibility and fairness does reduce individual variance in their beliefs, especially in the context of honesty, snoop, and integrity.

In general, though, the results from the variance function demonstrate that information has a strong effect on individual belief variance. The effects of information in Table 6 are always larger than those for the fairness-flexibility interaction, and in may

Table 5: Marginal Effects of Independent Variables

	Δ P(Y)=1			Δ P(Y)=6		
Dep. Variable:	Flex.	Fair.	Hon.	Flex.	Fair.	Hon.
Honesty	-.01	-.002	-.04	.16	.03	.16
Knowledgable	-.04	.000	-.007	.51	-.006	.30
Equitable	-.04	-.004	-.03	.33	.15	.34
Acc.	-.05	-.004	-.03	.33	.004	.13
Snoop	.000	.001	-.02	-.008	-.05	.24
Own	-.02	-.001	-.01	.39	.13	.40
Integrity	-.05	-.03	-.06	.24	.03	.05
Reas.	-.06	-.000	-.003	.89	.16	.58

Table 6: Marginal Effects of Independent Variables on Error Variance

Dep. Variable:	Info.	Flex.	Fair.	Conflict
Honesty	-.32	-.24	-.27	-.26
Knowledgable	-.24	-.38	-.15	-.17
Equitable	-.18	-.42	-.17	-.14
Acc.	-.43	-.37	-.23	-.16
Snoop	-.23	-.37	-.20	-.21
Own	-.31	-.37	-.19	-.14
Integrity	-.37	-.25	-.25	-.33
Reas.	-.38	-.29	-.19	-.14

cases larger than the independent effects of flexibility and fairness. This indicates that individual variation in their beliefs about the IRS stems not as much from expectation-induced ambivalence than from a lack of information about the activities of the IRS.

4 Conclusions

Recent political discourse, especially in the wake of insurgent, anti-Washington and anti-government candidates like Buchanan and Perot, seems to show an increasing level of ambivalence towards the institutions of government. Some branches of the federal government, like the FBI and the IRS, have drawn particular scorn from many elements in American society. In this paper we have begun the first systematic effort to understand this phenomenon — and the results shed considerable light on contemporary political debates.

We have three important conclusions to draw from our results in this paper. First, **flexibility and honesty are the values which tend to dominate beliefs about the IRS, not fairness.** We found that across the eight different dimensions of beliefs about the IRS, in general, flexibility and honesty had the strongest effect in determining individual attitudes about the IRS. This indicates that the current proposals to reform both the operations of the IRS and thecurrent tax code are not going to be easy and quick sales to the American public. On the one hand, the beliefs of Americans about the IRS are strongly related to the notion of flexibility — as flexibility increases in importance, so does positive evaluations of the IRS — which implies that if any proposal is to be successful, it must preserve or enhance the flexibility in the current system. But on the other hand, Americans also structure their attitudes about the IRS with beliefs about honesty; reforms must produce a system which is perceived as upholding this belief as well. Surprisingly, fairness is not as strong a determinant of beliefs about the IRS. Thus, changes in the tax code do not have to necessarily lead to a perception of fairness.

Second, **domain specific information does play a strong role in determining individual variability in beliefs.** In this respect, the findings here are similar to our earlier findings in the case of affirmation action beliefs. There too we showed that individual variability in beliefs is largely determined by information (or the lack of information) and not by conflicting core beliefs. Thus, as in the case of opinions about affirmative action, we feel that the beliefs of Americans about their governmental institutions is strongly influenced by the information they obtain about those institutions. In this sense, uncertainty in beliefs about the IRS are thus strongly influenced by elite discourse about the IRS specifically, and the government in general.

Third, **both competing values and domain-specific information influence the fundamental ambivalence of Americans about the IRS.** In the results presented here we have portrayed Americans as having complicated beliefs about the IRS. In our earlier work, we found that conflicting values influenced heterogeneity in beliefs

about abortion policy, but not for beliefs about affirmative action. We also found that information bore much more heavily in beliefs about affirmative action than abortion.

In the case of attitudes about the IRS, *both* information and value conflict are important determinants of heterogenous beliefs. Thus, ambivalence and uncertainty clearly are present in public opinion about this component of the executive branch of the federal government. In terms of the attitudes we examined, namely the honesty, equitability, "snooping", and integrity of IRS employees, value conflict and information had almost identical effects in our variance models; in the other four cases, though, the effects of information greatly outweigh the effects of value conflict.

Thus, the causes of heterogeneous beliefs in the case of the IRS fall between the the two cases we have examined in our past work. The next step in our research agenda is to step back and to begin to understand the processes which help shape public opinion from the macro-level. When Americans are ambivalent in their attitudes about important aspects of public policy or their government, what has made their core beliefs salient — and what has induced citizens to realize the conflicts in their beliefs? And when Americans are uncertain in these, or other attitudes, what is the source of their uncertainty? By understanding the origins of ambivalence and uncertainty in American public opinion we should be in a better position to explain what, if anything, can cause Americans to change their attitudes about politics.

5 References

Aitchison, J. and S. Silvey. 1957. "The Generalization of Probit Analysis to the Case of Multiple Responses," *Biometrika,* 44:131–40.

Alvarez, R. Michael and John Brehm. 1995. "American Ambivalence Toward Abortion Policy: A Heteroskedastic Probit Method for Assessing Conflicting Values." *American Journal of Political Science,* 39:1055–82.

Alvarez, R. Michael and John Brehm. 1997. "Are Americans Ambivalent About Race?" *American Journal of Political Science* (forthcoming).

Downs, Anthony. 1967. *Inside Bureaucracy.* New York: Harper-Collins.

Goodsell, Charles T. 1985. *The Case for Bureaucracy: A Public Administration Polemic,* Chatham, NJ: Chatham House Publishing.

Greene, William H. 1993. *Econometric Analysis,* 2d Edition. New York: MacMillan Publishing Company.

Harris, Louis and Associates, Inc. 1988. *1987 Taxpayer Opinion Survey.* Report to U.S. Internal Revenue Service.

Harvey, Andrew. 1976. "Estimating Regression Models with Multiplicative Heteroscedasticity," *Econometrica,* 44:461–465.

Hawthorne, Michael R. and John E. Jackson. 1987. "The Individual Political Economy of Federal Tax Policy." *American Political Science Review* 81:757–74.

Long, Susan B. and Judyth A. Swingen. 1991. "Taxpayer Compliance: Setting New Agendas for Research. *Law and Society Review* 25: 637–83.

Luskin, Robert C. 1987. "Measuring Political Sophistication." *American Journal of Political Science* 31:856–99.

McKelvey, R. and W. Zavoina. 1975. "A Statistical Model for the Analysis of Ordinal Level Dependent Variables." *Journal of Mathematical Sociology* 4:103–20.

Niskanen, William A., Jr. 1971. *Bureaucracy and Representative Government,* Chicago: Aldine-Atherton, Inc.

Perrow, Charles. 1987. *Complex Organizations: A Critical Essay, Third Edition,* New York: Random House.

Stanley, Harold W. and Richard G. Niemi. 1995. *Vital Statistics on American Politics,* fifth edition. Washington, D.C.: CQ Press.

Wilson, James Q. 1989. *Bureaucracy: What Government Agencies Do and Why They Do It,* New York: Basic Books, Inc.

Zaller, John. 1992. *The Nature and Origins of Mass Opinion.* Cambridge, Mass.: Cambridge University Press.

6 Appendix

The likelihood function for our ordered heteroskedastic logit model is relatively easy to derive. We begin by assuming that there is a continuous underlying process Y_i such that:

$$Y_i \sim F(y_i \mid \pi_i) \tag{11}$$

where the systemic component is the same as we write in the text (2):

$$\pi_i = F(X_i\beta) \tag{12}$$

Next we denote our "threshold" parameters by μ_j, where $j = 1, \ldots, m$ and $\mu_1 = -\infty$ and $\mu_m = \infty$. We constrain the thresholds so that the probabilities are always positive:

$$\mu_{j-1} < \mu_j < \ldots < \mu_m \tag{13}$$

We know from the data which category y_i belongs to, so we can write that y_i belongs to category j if the following expression holds:

$$\mu_{j-1} < y_i \leq \mu_j \tag{14}$$

To make the exposition easier, we assume that y_i is a series of binary variables (instead of being coded as one ordinal variable) such that:

$$y_{ij} = \begin{cases} 1 & \text{if } \mu_{j-1} < y_i \leq \mu_j \\ 0 & \text{otherwise} \end{cases} \tag{15}$$

We next write the probability that y_i is in j as:

$$P(y_i = 1) = P(\mu_{j-1} < y_i \leq \mu_j) \tag{16}$$

$$= F\left(\frac{\mu_j - X_i\beta}{\sigma^2}\right) - F\left(\frac{\mu_{j-1} - X_i\beta}{\sigma^2}\right) \tag{17}$$

Usual derivations of this likelihood at this point assume that $\sigma = 1$. As we argue in the text, we wish to assume that choice is heterogeneous, so we assume instead that

$$\sigma^2 = \exp(Z_i\gamma)^2 \tag{18}$$

where Z_i are variables which we believe measure the heterogeneity in choices across individuals and γ are coefficients.

We now write the likelihood for a given set of parameters as:

$$L = \prod_{i=1}^{n}\prod_{j=1}^{m}\left[F\left(\frac{\mu_j - X_i\beta}{\sigma^2}\right) - F\left(\frac{\mu_{j-1} - X_i\beta}{\sigma^2}\right)\right]^{y_{ij}} \tag{19}$$

We take logs to produce the log-likelihood function:

$$\ln L = \sum_{i=1}^{n}\sum_{j=1}^{m} y_{ij} \ln\left[F\left(\frac{\mu_j - X_i\beta}{\sigma^2}\right) - F\left(\frac{\mu_{j-1} - X_i\beta}{\sigma^2}\right)\right] \tag{20}$$

where we assume that F represents the logistic distribution.

This log-likelihood function is easy to program in GAUSS, and it quickly converges to a solution in the results we present in the paper. We experienced no difficulties with estimate threshold parameters going out of permissible bounds in our analysis here. GAUSS code to implement this model is available from the authors.

As we noted in the text, it is also possible to assume that F represents the normal distribution. That produces an ordered heteroskedastic probit model. We have replicated all of the results presented in this paper using an ordered heteroskedastic probit model, and the results are identical to those presented here. We slightly prefer the logit results since the logit models converge quicker than the probit models and since in practice the logit distribution is marginally easier to use and to program.